



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
PREVENTION, PESTICIDES
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MEMORANDUM

SUBJECT: Drinking Water Exposure Assessment and Ecological Risk Assessment
for Proposed New Use of Triadimefon on Residential Turf

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A handwritten signature in black ink, likely belonging to Jonathan Angier, is written over the "FROM" field.

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THROUGH: Tom Bailey, Ph.D., Branch Chief
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Jan Kohnen to Tom Bailey 11/3/08

The proposed restitution of Residential Turf Grass use for Triadimefon entails the same application rates, methods, intervals, and total annual application amounts as were previously assessed in the August 2006 Revisions to the 2005 Drinking Water Exposure Assessment and 2005 Ecological Risk Assessment. As these EECs are identical to those previously reported, please refer to these documents for details on exposure analyses.

The following information is extracted from the aforementioned documents. Since the only additional information supplied by the Registrant (Bayer Environmental Science) is a Developmental Neurotoxicity Study (DNT), there are no changes to the exposure analysis or to the EEC and RQ values (provided below).

Table 1. Estimated Concentrations of Triadimefon and its Degradate Triadimenol in Surface Drinking Water Using PRZM/EXAMS Scenarios (Turf)

Use Scenario	Portion of Turf (Treated)	Acute Concentration [ppb]	Chronic Concentration [ppb]	
			1 in 10 year annual mean (non-cancer)	30-year overall mean (cancer)
2 applications 14 day interval 2.7 lbs ai/A (1 oz/1000 ft ²)	Entire Area	100.8	24.94	4.071

Table 2. Estimated Concentrations of Triadimefon and its Degradate Triadimenol in Groundwater Drinking Water Using SciGrow

Use Scenario	Portion of Turf (Treated)	Groundwater Concentration [ppb]
2 applications 2.7 lbs ai/A	Entire Area	3.36

Table 3. Estimated Ecological Exposure Concentrations of Triadimefon and its Degradate Triadimenol in Surface Water, Using PRZM/EXAMS Turf Scenario

Use Scenario	Portion of Turf (Treated)	Acute (Peak) Concentration [ppb]	Chronic Concentration [ppb]	
			Invertebrates (21-Day)	Fish (60-Day)
2 applications 14 day interval 2.7 lbs ai/A (1 oz/1000 ft ²)	Entire Area	40.65	33.36	27.42

There are no LOC exceedances for fish, aquatic invertebrates, or aquatic non-vascular plants for Bayer's newly proposed turf maximum application rate of 2

applications of 2.7 lbs. ai/A at 14 day intervals. There were no studies available to assess risk to aquatic vascular plants (See Table 4).

Table 4. Aquatic Organism RQ calculations

Crop App. rate (# of apps., and interval between apps.)	Peak EEC (ppb)	Acute Risk Quotients			Chronic Risk Quotients	
		Freshwater Fish LC ₅₀ = 4100 ppb	Freshwater Invert. LC ₅₀ = 1600 ppb	Aquatic non- vascular plants EC ₅₀ = 17000 ppb	Freshwater Fish NOEAC = 41 ppb	Freshwater Invertebrate NOEAC = 52 ppb
FL turf 2.7 lbs. a.i./acre (2 app., 14 day intervals)	40.65	<LOC	<LOC	<LOC	< LOC	< LOC

Birds

There are acute and chronic LOC exceedances for birds. The turf maximum application rate of 2 applications of 2.7 lbs. ai/A at 14 day intervals results in acute RQ LOC exceedances that are 0.14 for short grass only and chronic RQ LOC exceedances that range from 4 to 57. Table 5 shows the avian acute and chronic risk quotients for turf use of triadimefon. An avian acute assessment was not conducted for granular applications because definitive avian LD₅₀ values were not available for triadimefon (no mortalities or signs of toxicity were seen in the study at the highest exposure level).

Table 5. Avian Dietary-Based Acute and Chronic RQs for turf uses of Triadimefon (based on NOAEC of 20 mg/kg diet) based on upper-bound Kenaga values.

Use (Application Rate)	Food Items	Upper Bound EEC (mg/kg)	Acute Dietary- Based RQ (EEC/LC ₅₀)	Chronic Dietary- Based RQ (EEC/NOAEC)
Turf (2.7 lbs. a.i./A, 2 applications, 14 day interval)	Short grass	1139	0.14	57
	Tall grass	522	0.06	26
	Broadleaf plants/small insects	641	0.08	32
	Fruits, pods, seeds, large insects	71	0.01	4

Mammals

For spray application, there are mammalian acute LOC exceedances (LOC > 0.5) for small and medium (15 and 35g) mammals which consume short grass treated

with 2 applications @ 2.7 lbs. ai/A with a 14-day interval. Endangered species LOCs are exceeded ($LOC > 0.1$) for all weight classes of mammals assessed. Acute RQs are summarized below in Table 6.

The predicted triadimefon granular EEC values resulting from turf application at a rate of 2.7 lbs. ai/A (2 applications, 14-day interval) are 28.12 mg/ft² (See Table 6).

Table 6. Mammalian Dose-based Acute RQs for turf uses of Triadimefon (based on Triadimenol LD₅₀ of 689 mg/kg in rats) based on upper-bound Kenaga values.

Spray Application							
Use	Body Weight (g)	Adjusted LD ₅₀	Mammalian Dose-based Acute Risk Quotients				
			Short grass	Tall grass	Broadleaf plants/ small insects	Fruits/pods/ large insects	Seeds
Turf (2.7 lbs. ai/A, 2 applications, 14 day interval)	15	1514	0.72	0.33	0.40	0.04	0.01
	35	1225	0.61	0.28	0.34	0.04	0.01
	1000	530	0.33	0.15	0.18	0.02	0.00
Granular Application							
Use	Body Weight (g)	Mg a.i./sq ft	Adjusted LD ₅₀	Risk Quotient			
Turf (2.7 lbs. ai/A, 2 applications, 14 day interval)	15	28.12	1514	1.24			
	35	28.12	1225	0.66			
	1000	28.12	530	0.05			

In addition, there are LOC exceedences of mammalian chronic risks ranging from 1.42 to 23 for the turf maximum application rate of 2 applications of 2.7 lbs. a.i./A at 14 day intervals (See Table 7).

Table 7. Mammalian Dietary-based Chronic RQs for selected uses of non-granular Triadimefon (based on triadimefon rat NOAEL of 50mg/kg diet) and upper-bound Kenaga values.

Use	Dietary-based Chronic Risk Quotients			
	Short Grass	Tall Grass	Broadleaf plants	Fruits/pods/ large insects/seeds
Turf (2.7 lbs. ai/A, 2 applications, 14 day interval)	22.8	10.4	12.8	1.42